Prevent your components from micro-cracking during reflow with proper Ultra-Low Humidity Storage.

Conforms to IPC/JEDEC J-STD-033D and IPC-1601 Guidelines.
- ESD safe design adheres to IEC-61340-5-1 (ESD) Standard.
- Dehumidifies ICs to prevent micro-cracking and can be used as an alternative to baking.
- All models maintain 1%RH.
- Powerful moisture absorbent is utilized to eliminate the use of nitrogen.
- Wide range of cabinets.

http://www.mcdry.eu
Why do components require low humidity storage?

McDry Prevents Micro-Cracking of IC Packages and chip LEDs During Reflow.

The high temperatures involved in vapor phase or reflow passes cause the absorbed moisture to expand rapidly.

Micro-cracking occurs in nearly 100% of IC packages and chip LEDs containing moisture during the reflow process. Occurring over an extended period of time, this can cause breakage of wiring and other problems.

Micro-cracking can be prevented with storage and dehumidification of IC’s and chip LEDs using McDry as well as resetting the floor life of components according to the IPC/JEDEC J-STD-033D.

McDry Dry Storage Cabinets maintain ultra-low humidity levels under the recommended indefinite safe floor life guideline of dry storage at 5% RH or less.

For storing moisture-sensitive components and materials in the McDry cabinet, the floor life of the parts during the SMT assembly process. Simply place the MSL parts in McDry to maintain safe dry storage and remove them as required.

When moisture-sensitive components are stored in a dry environment capable of maintaining 5% RH or less, the floor life will be indefinite according to the IPC/JEDEC J-STD 033D.
**Absorption and Dehumidification Data of IC Packages**

PBGA
Test Sample: PBGA
Pretreatment: Baked at 125°C, 24hrs.

**Conditions**
1. Package is stored in simulated room conditions (30°C, 85% RH, 24 hours). A controlled temperature, humidity chamber is used.
2. After Process 1 above has been completed, the package is stored in a low humidity storage case for 100 hrs at 5% RH.
3. After the baking process the package is stored in a low humidity storage case at 5% RH.

**Low Humidity Storage of Thin Multi-Layer PCBs**

Multi-layered PCBs absorb moisture at a faster rate as they become thinner. Layer break off and blistering will occur during reflow if the moisture content of the PCB exceeds 0.2% (weight).

Test Sample: 6 layer Glass Epoxy PCB  
Size: 50 x 100 x 1t (mm)  
Pre-Treatment: Baked for 24 hours @125°C  
Humidification: Steamed for 2 hours  
De-Humidification: Stored in McDry Cabinet @5%RH

**Data on Moisture Absorption and Dehumidification of Chip LEDs**

Experiment
Data on moisture absorption and dehumidification of chip LEDs
Example: LED3025 (3.0 mm x 2.5 mm x t1.3 mm)  
floor life 168 h  
Pretreatment: 48 hour-Baking Process at +60C  
(LED makers' baking guideline)

1. Chip LED stored in ambient environment (30°C, 60% RH) for 168 hours.
2. After 11 hours of storage in this environment, it was left for 13 hours in a dry box at < 3% RH. This process was repeated 5 times from Monday to Friday and left for 61 hours in a dry box at 3% RH.
3. After baking, the LED chip was stored in a dry cabinet capable of maintain 3% RH. (This is a similar condition with an LED chip that is stored in an dry cabinet rigt after opening a moisture barrier bag.)
Manufactured for High Performance

- Locking doors that seal tightly.
- Solid steel construction with ESD safe design.
- Adjustable shelves (stainless steel available).
- Drying unit
- Cabinet is grounded to prevent component damage due to static electricity.

Range
- Humidity: 1~70%RH
- Accuracy: ±3%RH

Features
1. Powerful zeolite desiccant eliminates the need for nitrogen.
2. Desiccant is automatically recycled and does not require replacement.

Handling and Storage Guidelines of IC Packages

Storing in 5% RH and 10% RH storage cabinets in accordance with IPC/JEDEC J-STD 033D

In accordance with IPC/JEDEC J-STD-033D, IC packages that have been removed from MBBs must be kept under a condition of 5% or 10% relative humidity to prevent components from absorbing moisture. However, during the mounting process, opening and closing of dry cabinet storage doors may occur frequently in order to remove and replace moisture-sensitive devices. This will allow ambient air to flow into the cabinet and may raise the RH level. To limit this from occurring and to keep the relative humidity inside of the cabinet below 5% or 10% as specified, a consistent, ultra-low humidity storage level is recommended. Therefore, the storage guidelines utilizing the McDry cabinet corresponding to the repetition of opening and closing of doors are as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>RH level</th>
<th>Frequency of opening-closing of doors</th>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXU models</td>
<td>1% RH</td>
<td>Once in approx. 10 – 20 mins.</td>
<td>1. Ultra-low humidity storage of IC’s for cabinets that are accessed frequently.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Storage of IC packages that require ultra-low humidity storage such as compo-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>nents with high MSL classifications.</td>
</tr>
<tr>
<td>MC models</td>
<td>1% RH</td>
<td>Once in approx. 0.5 – 2 hrs</td>
<td>1. Ultra-low humidity storage of IC’s for cabinets that are not accessed frequently.</td>
</tr>
<tr>
<td>MCU models</td>
<td></td>
<td></td>
<td>2. Long-term storage of IC packages and electrical components.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Storage of PCBs, etc.</td>
</tr>
</tbody>
</table>

Humidity Data of McDry Cabinets

Humidity (%RH)

DXU-1001A (1%RH)

Elapsed time (hr) (Ambient Test Conditions: 25°C, 60% RH)

MCU-401A (1%RH)

Elapsed time (hr) (Ambient Test Conditions: 25°C, 60% RH)
DXU Mode / 1%RH Quick Dehumidification Model

Door Opening / Closing: Once every 20 – 40 min.

Opening-Closing Data of DXU-1001A

<table>
<thead>
<tr>
<th>Location and time of door opening/closing</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (1) ..... 2 doors (C), (D) ............... 2 min. open both</td>
</tr>
<tr>
<td>No. (2) ..... 1 door of (A), (B), (C) .......... 15 sec. open</td>
</tr>
<tr>
<td>No. (3) ..... 2 doors (A), (B) ............... 1 min. open both</td>
</tr>
<tr>
<td>No. (4) ..... 1 door of (B), (E), (F) ........... 15 sec. open</td>
</tr>
<tr>
<td>No. (5) ..... 2 doors (E), (F) ............... 1 min. open both</td>
</tr>
<tr>
<td>No. (6) ..... 2 doors (E), (F) ............... 30 sec. open both</td>
</tr>
<tr>
<td>No. (7) ..... 1 door of (A), (B), (C), (E), (F) 15 sec. open</td>
</tr>
<tr>
<td>No. (8) ..... 2 doors (C), (D) .......... 30 sec. open both</td>
</tr>
</tbody>
</table>

Specifications (Note: Specifications are subject to change due to product improvement.)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DXU-1001A</th>
<th>DXU-1002A</th>
<th>DXU-501A</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Dimensions (mm)</td>
<td>W1200×D700×H1850</td>
<td>W1200×D700×H1850</td>
<td>W600×D700×H1850</td>
</tr>
<tr>
<td>Internal Dimensions (mm)</td>
<td>W1170×D586×H1593</td>
<td>W1170×D586×H1593</td>
<td>W570×D586×H1607</td>
</tr>
<tr>
<td>Capacity (ℓ)</td>
<td>Approx. 1200</td>
<td>Approx. 1200</td>
<td>Approx. 600</td>
</tr>
<tr>
<td>Drying Unit</td>
<td>US-5000F×2</td>
<td>US-5000F</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>High-grade steel construction with ESD-safe and Anti corrosion coating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Silver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doors (Magnetic)</td>
<td>6 doors with glass windows</td>
<td>4 doors with glass windows</td>
<td>3 doors with glass windows</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 200 kgs.</td>
<td>Approx. 190 kgs.</td>
<td>Approx. 110 kgs.</td>
</tr>
<tr>
<td>Electrical Requirement</td>
<td>AC230V 50/60Hz 64W/h ( MAX700W)</td>
<td>AC230V 50/60Hz 31W/h ( MAX 350W)</td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td>5 Shelves, Locks, RH meter, Caster, Ground terminal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Features
1. Can maintain an RH level of 1%.
2. Equipped with a digital RH Meter.
3. Locking Doors.
4. Adjustable shelves.
5. Loading capacity 100 Kgs
6. Grounded to prevent static electricity.
## Specifications (Note: Specifications are subject to change due to product improvement.)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MC-1001A</th>
<th>MC-1002A</th>
<th>MCU-201A</th>
<th>MCU-301A</th>
<th>MCU-401A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Dimensions (mm)</strong></td>
<td>W1200×D700×H1850</td>
<td>W1200×D700×H1850</td>
<td>W500×D570×H630</td>
<td>W500×D670×H1200</td>
<td>W500×D670×H1530</td>
</tr>
<tr>
<td><strong>Internal Dimensions (mm)</strong></td>
<td>W1170×D586×H1593</td>
<td>W1170×D586×H1593</td>
<td>W482×D496×H546</td>
<td>W482×D596×H1099</td>
<td>W482×D596×H1399</td>
</tr>
<tr>
<td><strong>Capacity (ℓ)</strong></td>
<td>Approx. 1200</td>
<td>Approx. 1200</td>
<td>Approx. 135</td>
<td>Approx. 310</td>
<td>Approx. 400</td>
</tr>
<tr>
<td><strong>Drying Unit</strong></td>
<td>US-5000F</td>
<td>USF-3200</td>
<td>USF-3200</td>
<td>USF-4000</td>
<td>USF-4000</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>High-grade steel construction with ESD-safe and Anti corrosion coating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Silver</td>
<td>Ivory</td>
<td>Ivory</td>
<td>Ivory</td>
<td>Ivory</td>
</tr>
<tr>
<td><strong>Doors (Magnetic)</strong></td>
<td>6 doors with glass windows</td>
<td>4 doors with glass windows</td>
<td>1 doors with glass window</td>
<td>2 doors with glass windows</td>
<td>3 doors with glass windows</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 190 kgs.</td>
<td>Approx. 180 kgs.</td>
<td>Approx. 30 kgs.</td>
<td>Approx. 60 kgs.</td>
<td>Approx. 70 kgs.</td>
</tr>
<tr>
<td><strong>Electrical Requirement</strong></td>
<td>AC230V 50/60Hz 31W/h (MAX 350W)</td>
<td>AC230V 50/60Hz 20W/h (MAX 150W)</td>
<td>AC230V 50/60Hz 25W/h (MAX 240W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>5 Shelves, Locks, RH meter, Caster, Ground terminal</td>
<td>4 Shelves, Locks, RH meter, Ground terminal</td>
<td>8 Shelves, Locks, RH meter, Ground terminal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Features**

1. Can maintain an RH level of 1%.
2. Equipped with a digital RH Meter.
3. Locking Doors.
4. Loading capacity MC-1001A, 301A, 401A: 50 kgs
   MC-1001A, MC-1002A: 100 kgs
5. Grounded to prevent static electricity.

**Door Opening / Closing:** Once every 0.5 – 2 hrs.

**Humidity (%RH)**

- **MC, MCU Model / 1% RH**
- **Location and time of door opening/closing**
  - No. (1) ..... 2 doors (A), (B) .... 2 min. open both
  - No. (2) (3) (4) (5) ..... 1 door (A) ....20 sec. open
  - No. (6) ..... 1 door (A)....................... 1 min. open

**Door Features**

1. Can maintain an RH level of 1%.
2. Equipped with a digital RH Meter.
3. Locking Doors.
4. Loading capacity MCU-201A, 301A, 401A: 50 kgs
   MCU-1001A, MCU-1002A: 100 kgs
5. Grounded to prevent static electricity.
### Specifications (Note: Specifications are subject to change due to product improvement.)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MODEL</th>
<th>DXU-580SF</th>
<th>DXU-580AF</th>
<th>DXU-1002-1000A</th>
<th>DXU-1002LA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Dimensions (mm)</strong></td>
<td></td>
<td>W880 x D1200 x H1324</td>
<td>W880 x D1200 x H1600</td>
<td>W1200 x D1045 x H1850</td>
<td>W1200 x D1000 x H1850</td>
</tr>
<tr>
<td><strong>Internal Dimensions (mm)</strong></td>
<td></td>
<td>W830 x D1100 x H790</td>
<td>W830 x D1100 x H955</td>
<td>W1150 x 1000 x H1552</td>
<td>W1150 x D900 x H1552</td>
</tr>
<tr>
<td><strong>Capacity (ℓ)</strong></td>
<td></td>
<td>Approx. 900</td>
<td>Approx. 932</td>
<td>Approx. 2000</td>
<td>Approx. 1600</td>
</tr>
<tr>
<td><strong>Drying Unit</strong></td>
<td></td>
<td>US-5000F×2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td></td>
<td>High-grade steel construction with ESD-safe and Anti corrosion coating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Doors (Magnetic)</strong></td>
<td></td>
<td>2 doors with glass windows</td>
<td>2 doors with glass windows</td>
<td>2 doors with glass windows</td>
<td>4 doors with glass windows</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
<td>Approx. 200 kgs.</td>
<td>Approx. 200 kgs.</td>
<td>Approx. 350 kgs.</td>
<td>Approx. 250 kgs.</td>
</tr>
<tr>
<td><strong>Electrical Requirement</strong></td>
<td></td>
<td>AC230V 50/60Hz MAX 700W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td></td>
<td>Locks, RH meter, Caster, Ground terminal</td>
<td>5 shelves, Locks, RH meter, Caster, Ground terminal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DXU-580SF**
(1% RH)
Electric Tape Feeder Storage

**DXU-580AF**
(1% RH)
Mechanical Tape Feeder Storage

**DXU-1002-1000A**
2000ℓ (2-door type)

**DXU-1002LA**
1600ℓ (4-door type)
## Optional Parts for McDry

<table>
<thead>
<tr>
<th>Hygrometer with alarm</th>
<th>Data logger</th>
<th>Reel rack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm lamp is triggered when the humidity exceeds the set parameters.</td>
<td>Humidity data is recorded at all times.</td>
<td>A variety of tape reels can be stored efficiently.</td>
</tr>
</tbody>
</table>

### N2 socket
- Nitrogen purge is available.

### Flow meter
- This flow meter can measure and control N2 flow.

### Shelves (Steel Stainless)
- Additional shelves can be purchased for all models. Stainless steel shelves are also available.

### ESD Caster Wheels
- ESD-safe casters are available for the MCU type as an option. (DXU type equipped with this caster as standard)

### Adjustor
- Adjusts the height of the cabinet.

### Sliding shelf
- With the sliding shelf, picking up the stored items become easily.

### Tower Light
- The tower light flashes when humidity goes over the level set using the hygrometer with alarm.

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